

Golden
Empire
Amateur
Radio
Society, Inc.

"Dedicated to Public Service"

THE RADIATOR

W6RHC
IRLP #8170

www.gears.w6rhc.org

P.O. Box 202 Chico, CA 95927

November 2021 Newsletter

GEARS Founded August 13, 1

GEARS members participated in JOTA with several scout troops on October 16th. The kids enjoyed making contacts to another scout troop in Elk Grove, a fox hunt and an HF demonstration. It was a fun day for everyone.

Dues are due by the end of the year. You can pay by PayPal <http://paypal.me/w6rhc> at a meeting or mail. I've included a membership form, please submit if any of your information has changed. Dues are \$20 standard membership or \$30 for supporting members, \$100 for Century Member (these are members who would like to offer extra support.) You may also make a donation to our repeater fund.

Michael Ellithorp KF6OBI has made major improvements at the repeater site on St. John. He has added weather protection and improved antennas. Your donations to the repeater fund can help cover the cost.

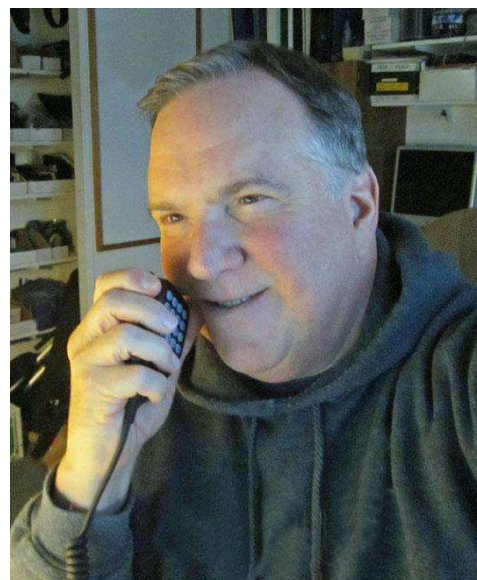
GEARS will hold an auction in Winter of 2022, start saving up as we will have some great equipment available.

At the November GEARS meeting on Nov 19th. We will finalize nominations of club officers for 2022. If you would like to serve the club please let me know.

COVID is still a concern in the area. Due to abundance of caution we ask that only vaccinated people attend GEARS indoor events such as breakfast or meetings.

Happy November Birthday wishes to Dale Anderson KK6EVX, John Benedick KE5RS, Collin Dever KN6LGI, Eric Dicus KN6NGC, Vincent Erickson KN6JFG, Mark Forwalter KN6JAA, Harlan Goodsell W7LTH and Stephen McDermott K6AKF.

Take care and stay safe.



'73
Jim Matthews K6EST
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530-893-3314



Join GEARS on Facebook
www.facebook.com For timely
news and additional information.

November 2021 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 7pm GARS Net 8pm ARES Net	2 7pm PARS Net 7:30pm GEARS Net	3	4 7:30pm Simplex Net	5	6
7 8pm OARS Net	8 7pm GARS Net 8pm ARES Net	9 7pm PARS Net 7:30pm GEARS Net	10	11 6:30pm PARS Meeting 7:30pm Simplex Net	12 7pm OARS meeting 7pm GARS meeting	13 9am GEARS Breakfast
14 8pm OARS Net	15 7pm GARS Net 8pm ARES Net	16 7pm PARS Net 7:30pm GEARS Net	17	18 7:30pm Simplex Net	19 7pm GEARS Meeting	20
21 8pm OARS Net	22 7pm GARS Net 8pm ARES Net	23 7pm PARS Net 7:30pm GEARS Net	24	25 THANKSGIVING 7:30pm Simplex Net	26	27 9am OARS Breakfast
28 8pm OARS Net	29 7pm GARS Net 8pm ARES Net	30 7pm PARS Net 7:30pm GEARS Net				

VEC Testing, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211

Chico Breakfast 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico

GEARS Board Meeting 1st Monday 7pm by zoom.

PARS Meeting 2nd Thursday 6:30pm, doors open 6pm Old Magalia Community Resource Center

OARS Meeting Second Friday of the month

GARS Meeting Second Friday of the month

Butte ARES Meeting 3rd Tuesday, TBD Contact Dale Anderson, KK6EVX 826-3461 for more information.

GEARS Meeting, 3rd Friday of the month, Eyeball QSO 6pm, meeting at 7:00 pm. Search & Rescue Building

OARS Breakfast 4th Saturday of the month

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net Monday, 7:00 pm 147.105 MHz + PL 110.09

Butte ARES Net Mondays 8pm 145.290 MHz - PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Tuesday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

GEARS Century Members

Dale Anderson Kent Hastings

Bennett Laskey Tony Nasr Scott Roberts

We thank these members for their extra support.

GEARS Repeaters

GEARS West on St. John

145.410 MHz PL is 123.0 Negative offset.

PL both input and output (CTSS)

GEARS East in Forrest Ranch

146.850 MHz Negative offset. PL 110.9 CTSS

440.650 MHz Plus offset, PL 110.9 Hz

A Quick Guide to USB Cables & Connectors

It's easy to get confused with all the letters and numbers that follow different types of USB cables and connectors. So here's a detailed guide in which we'll present the main USB cable types. We will also explain what the letters and the numbers in the USB names mean so you know exactly what to look for when you're buying a USB cable.

The Letters that Come After "USB" in the Type Name

The first thing you'll probably see when checking out USB cables is that there are different letters assigned to various connectors. These letters indicate the exact type of the USB connector and you can find them in the cable name, usually after a dash. So, we'll begin our article by explaining what these letters really mean.

When you think of a USB cable, the type that first comes to your mind is probably the USB type-A. This type is the most common one. You can find this kind of USB port on most laptops and desktop computers. Moreover, many cables that go into phone chargers have the USB Type-A on one end while the other end is based on the model of the phone you have. You can also find it on TVs, receivers, headphones, and so on. Despite being the oldest model produced, type A is still the most popular one. Its shortcomings have been updated in different speed configurations which is covered later in this article.

The least popular of all of the connector types is Type-B. It is smaller than type A and it looks like an oddly shaped rectangle. You will find it on older external hard drives. In addition, older printer models used a USB Type-B port. USB Type-B can also often be found on Amateur Radio gear, either to externally control it or for updating its firmware.

The last main type of USB connectors is Type-C. It's the newest connector type and it is present on most of the latest laptops, phones, Bluetooth speakers, headphones, and other devices. You can recognize it by its thin, kind of oval, shape. They can come with cables that have type A on one end or those with Type-C ports on both ends.

That means that you can connect two devices that support the Type-C connection, which is something that wasn't thought about as much when Type-A and B were produced. A great upside to this type of USB is that it supports the highest speeds for data transmission. So, that's why it's becoming more and more popular.

As we mentioned, Type-C can support the latest technologies. So, another great feature associated with a USB Type-C is Thunderbolt 3. Thunderbolt 3 is the newest Thunderbolt interface that is only compatible with the Type-C connector. However, you shouldn't mix up the USB Type-C connector and Thunderbolt 3 because they are not the same thing. That's vital to mention because, even though you can plug Thunderbolt 3 connector into any device that supports Type-C, not all USB Type-C ports support Thunderbolt 3. Thus, you should check what your device can handle before purchasing the Thunderbolt 3 cable. So, Thunderbolt 3 has a connector that is the same as the USB Type-C port, but it can transfer data at a much higher speed. In fact, its speed is two times faster than the one of USB Type-C.

"Mini" and "Micro" Labels before the Letter in the USB Type Name

While we're on the topic of innovations, most phone companies have switched to the USB Type-C or Thunderbolt 3 as their main connectors. For example, a lot of newer Android models come with this port. Moreover, Apple also adopted it for new Macbook models. In addition, many TVs and external monitors today support either USB-C or Thunderbolt 3.

Did you ever notice the "mini" or "micro" label before the letter indicating the port type? Well, that label is also important because it shows the kind of a subtype of the USB. As you can probably guess by its name, the "mini" written before the letter means that the USB port is smaller than the average size for that type. In the past, most mobile phone manufacturers used this type of connector for phone charging. However, nowadays, newer USB connectors are used for that and the mini port is not as common. It supports lower speeds, which is one of the reasons why it was replaced by the micro connector.

Type-A to Type-C



USB 2.0 Type-B



USB 3.0 Type-B



USB 2.0 Type-A



USB 3.0 Type-A



The “micro” connector presents a newer type of USB port. Most phones produced some 5 years ago used a micro USB. You can also see it on numerous smaller, portable devices such as batteries, game controllers, and external hard drives. Micro USB ports are much more common than mini USB.

Numbers in the USB Type Name The numbers you can see in the USB type indicate the speeds at which they transfer data. The oldest version is the 1.0 one and it came out in 1995. The first version was quickly replaced by the USB 1.1. This version can transfer around 12 megabits of data per second. Despite being the slowest version, it can still be found on many devices. As you can probably guess, the second version was USB 2.0 It was officially introduced to users in 2000. Its transfer rate is around 480 megabits per second. You can find it on most Type-A connectors, some USB-B ports, as well as in mini and micro USB cables. Furthermore, it is compatible with USB Type-C.

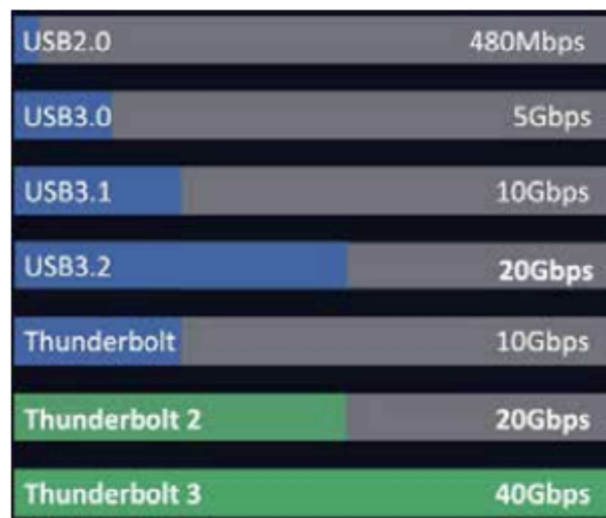
The next version was USB 3.0. It came out in 2008 and has been upgraded multiple times, which is why you’ll often see 3.1 or 3.2 in the USB names today. The basic 3.0 type was able to transfer data at the speed of around 5 Gigabits per second (Gbps). It works with all three of the main types of connectors including micro subtype.

We’ve already mentioned that the 3.0 version has been updated a few times. The 3.1 version has two generations, with the second one having a speed of 10 Gbps. USB 3.2, on the other hand, is the latest one of all upgrades. Its maximum speed is 20 Gbps and it works with the Type-C connector.

The latest USB version is 4.0. Its speed is should go from 20 to 40 Gbps. It will work with the Type-C connector and should be able to handle the Thunderbolt 3. However, this one still isn’t on everyday consumer devices.

In general, there are two main types of cables. The first one features the same USB connector on both ends. So, the cable with two Type-C ports is the Type-C cable. The other type of USB cable is the one that has the connector of one type on one end and another type of connector on the other. Their main purpose is to connect devices with different types of ports.

Now you hopefully have all the info to understand USB cable types.



Max speeds of different USB and Thunderbolt versions

Shortwave Radios Keep Up With Tech

There’s still lots to listen to, and new ways to do it

By James Careless

Surprise! Shortwave radio as a broadcast medium is holding its own, despite the intrusion of the Internet, transmission cutbacks by major broadcasters such as the BBC World Service and Voice of America and abandonment of the SW bands by other state-owned broadcasters. Meanwhile, the ways in which people listen to SW radio transmissions are evolving, because SW receiver manufacturers are keeping up with the technological times.

There is no doubt that the variety of stations on the SW bands has declined, due to the end of the Cold War — the propaganda war of which drove the medium in the 1950s and 1960s — and the emergence of the Internet. Nevertheless, “Even with many stations that are long gone, there is still quite a lot to listen to on the SW radio bands,” said Gilles Letourneau, host of the OfficialSWL channel on YouTube (25,600 subscribers) and editor of the CIDX Messenger magazine column “World of Utilities.”

“You have stations like Radio Romania, Voice of Turkey, Radio Prague, Radio Slovakia and Radio Tirana, Albania, while WRMI in Miami has popular listener-created programs like Voice of the Report of the Week,” he said.

"The big broadcasters are there as well but they don't target North America anymore. Still, I get my share of BBC World Service, Radio France International, Voice of America and Vatican Radio mostly targeting Africa, Middle East and Asia but still listenable here at certain times of day."

Most of the stations that have left shortwave are government-owned or -operated services like Radio Canada International, Channel Africa, Radio Portugal, the Voice of Russia and Radio Australia said Jeff White, WRMI's general manager and chairman of the High Frequency Coordination Conference. But others remain on the air with reduced services, languages or target areas including the VOA, Radio Deutsche Welle (Voice of Germany), Radio France International, Radio Exterior de España and All India Radio.

"Others are operating at near-normal levels, such as Radio Japan, Radio Korea, Radio Romania International, Radio Havana Cuba, the Voice of Turkey, Radio Taiwan International and many more," White continued. "Some stations don't use shortwave transmitters in their own country, but they use overseas relays, including Radio Prague International, Radio Slovakia International, RAE Argentina to the World and Radio Tirana."

Further, many former government-owned shortwave transmitter sites — such as Radio Netherlands in Madagascar and sites formerly operated by the BBC, Radio France International and Deutsche Welle sites — have been privatized and are selling airtime to private religious, commercial and cultural broadcasters.

Technologically speaking, the big trend in SW radio receivers is the ongoing move to software defined radios. SDRs harness the processing power of personal computers to perform the majority of their tuning, visual display and audio reproduction features. All that is added is a piece of plug-in hardware that contains the specific radio receiver hardware, and a connection to an outboard antenna of the user's choice. And, because SDRs leverage the power of users' computers, they can do much more than conventional standalone SW radio receivers, and at a much lower price.

"Software-defined receivers have had a really big impact on the shortwave listening hobby," said Letourneau "A \$200 SDR can rival a much more expensive tabletop receiver in performance. Add the flexibility of viewing a large bandwidth of frequencies in real time on your computer screen, and it all adds to the experience of listening. You can see where a signal has popped up and just click to listen in."

White agrees. "I think SW SDRs are a major trend that seems to be growing every year. Since most people have personal computers nowadays, it's a more practical option, and at a quite reasonable cost. As well, SDRs have made dozens of remotecontrol online SDRs possible worldwide, enabling listeners to tune shortwave receivers halfway around the world on their PCs or telephones and hear shortwave stations that they can't normally hear in their own area."

Like standalone shortwave receivers, the shortwave SDR market offers a range of models to choose from at various price points. "These can be something as compact as a USB-based 'radio on a dongle' to a more self-sufficient 'Kiwi WebSDR' that is not only a wideband receiver, but also has a Linux-based backbone processor called the 'Beagle Bone,' which is very similar to the Raspberry Pi," said Colin Newell, editor/creator of the DXer.ca website. "Not only is the Kiwi a 10 kHz to 30 MHz radio, but it is also remotely accessible and controllable on the Internet. There can be as many as eight listeners tuning it remotely, so it is virtually eight radios in one."

Meanwhile, the Perseus line of SDRs can actually capture and record large swathes of the SW radio spectrum at a time. "Much like the VCRs of old, 'spectrum capture' now affords the 'recording' of the entire radio spectrum over time for later listening and uncovering of exotic targets," Newell said. SDRs can also provide active noise canceling to eliminate problems with local noise sources from electronics, and support co-channel canceling to receive a weaker station completely overlapped and buried under another stronger station. The price of entry-level SDRs can also be ridiculously low. For instance, the RTL-SDR Blog 3 "radio on a dongle" is a credible SDR SW receiver and costs \$25.

Carl Laufer, owner of the company, says, "The RTL-SDR Blog V3 is one of the cheapest, yet most versatile SDRs on the market. At its core it's an RTL-SDR that has been heavily modified for better performance and to have additional features. One feature is the ability to easily activate in software the 'direct sampling mode,' which allows users to receive SW radio frequencies without the need for an upconverter that would be required by other RTL-SDRs. Granted, the receive performance of direct sampling mode is nowhere near comparable to the high-end,

higher-priced SDRs, but it can be a very cheap way to receive SW.”

While the SDR trend is definitely changing the way that many people listen to SW radio the complexity of these units for nontechnical people, and the fact that they need to be connected to computers, have kept many SW fans tuned to standalone radios. In this area, portable SW radios are enjoying the most popularity, because the computer technology that has made SDRs possible also supports the manufacture of sensitive, precise portable radios at very affordable prices.

“It has never been so inexpensive to get a decent radio that will get most of what you want on the bands,” said Letourneau. “The trend is towards DSP-based receivers because they are cheap to build and perform quite well.

Some top-performing tabletop SW receivers are still being made, “but only for the radio geek that can afford them,” said Letourneau. “They do offer a slight edge in their options and flexibility, but for most people, shortwave works just fine on an inexpensive portable that is very surprisingly good in sensitivity.”

And for those who yearn for the elegant SW tabletops of old? Thanks to the durability of this technology, many older models are still available for purchase.

“The retro market in radio is very big, from used tabletop models like Yaesu, Kenwood, Icom, Drake and used portables from Sony, Panasonic and Grundig,” Letourneau told RW. “Old tube receivers are also very in right now, like old Hallicrafters, for example.” “Radio sales in general, including SW radios, have seen an uptick in sales since COVID-19,” said Marsiglia. “Individuals working and staying at home crave some form of connection more than ever. Turning on a radio is the easiest way to connect with your favorite music, sports, news and so much more.”

GENESIS Satellites Among Payloads Lost in Launch Failure

The GENESIS-L and GENESIS-N ham radio satellites were among several carrying amateur radio payloads lost following the failure of the Firefly Alpha rocket during its first launch on September 2nd from the Vandenberg Space Force Base in California. An anomaly occurred about two minutes into the mission, causing controllers to destroy the launcher in flight.

The failure was particularly sad news for AMSAT-EA (Spain), as GENESIS-L and GENESIS-N were the first satellites they had built themselves. They were to conduct a series of telecommunications-related experiments. Also lost in the launch failure were the Serenity, Hiapo, the Cresst Dream Comet, and QUBIK-1 and QUBIK-2 satellites, and Spinnaker-3/Firefly Capsule 1. All were designed to use amateur radio frequencies for telemetry and communications.

Serenity, a 3U CubeSat, was developed by Teachers in Space (TIS) to provide low-cost opportunities to test educational experiments in space.



GEARS Club Officers:

President.....Jim Matthews, K6EST
 Vice-President.....Paul Stewart, N6PAS
 Secretary.....Open
 Treasurer.....Kathy Favor, K6FAV
 ARES.....Dale Anderson, KK6EVX
 Director.....Bennett Laskey, K6CEL
 Director.....Kent Hastings, WA6ZFY
 Director.....Rich Astley, N3UOR
 Past President.....Tom Rider, W6JS
 VEC.....Tom Rider, W6JS

GEARs Radiator past issues are available at:
<https://drive.google.com/drive/folders/0B-jPu0P0RkymZ2Q1WDR6THZLNmM?usp=sharing>

Photos from GEARs Steak 1969
<https://photos.app.goo.gl/euv1NPHCjtwAcwT69>

Photos from GEARs Steak 1989
<https://photos.app.goo.gl/n66qqKsNLdwTgJBc6>

Photos from GEARs Ham Fest 1989
<https://photos.app.goo.gl/kq29mD5io6wXd9fk6>

Photos from GEARs recent GEARs meetings
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